

Ticosonde/CR-AVE 2006

Ticosonde/CR-AVE is an international collaborative campaign of meteorological balloon measurements that will take place in January and February 2006 in support of the Costa Rica Aura Validation Experiment based at Juan Santamaria International Airport, Alajuela, Costa Rica. Ticosonde/CR-AVE consists of three simultaneous launch programs: (1) ascents four times daily at 00, 06, 12 and 18 UT of Vaisala RS92-SGP radiosondes, (2) 30 ascents over the 2-month period of a combined cryogenic frostpoint hygrometer (CFH) and ozonesonde payload, and (3) five ascents of a new tunable diode laser (TDL) water vapor sonde optimized for stratospheric measurements.

The Ticosonde/CR-AVE measurements of water vapor, ozone, temperature and winds will be used for validation of Aura and other "A-train" satellite measurements as well support of the CR-AVE aircraft measurements and flight planning. In addition, the Ticosonde-CR/AVE project seeks to use the unique vantage point afforded by the combination of high-frequency radiosonde measurements with regular tropical water vapor and ozone profiles to investigate the complex of dynamical and convective processes in the tropical tropopause layer (TTL) from high-frequency gravity waves out to intraseasonal phenomena such as the Madden-Julian oscillation. Significantly, the Ticosonde-TCSP campaign in July 2005 provided evidence of tropopause dehydration induced by cooling in equatorial waves on a time scale of 4-5 days, and it will be

Dr. Henry Selkirk of the NASA-Ames Research Center and the BAER Institute is leading the radiosonde program in conjunction with Prof. Walter Fernandez of the Escuela de Fisica at the University of Costa Rica (UCR), Werner Stolz of the Instituto Meteorologico Nacional (IMN) and Dr. Jorge Andrés Diaz of the Centro Nacional de Alta Tecnologia (CENAT). Radiosonde launches will be conducted by IMN personnel in collaboration with UCR students at the sonde site at the west end of the airport. The Vaisala RS92-SGP sondes will be launched on 500- and 600-gram balloons and should reach an average of 28 km.

Dr. Holger Vömel of the University of Colorado and the NOAA Earth Systems Research Laboratory (ESRL) is leading the CFH-ozonesonde launch program in partnership with Drs. Juan Valdés and Jessica Valverde of the Escuela de Quimica of the University Nacional (UNA). The CFH/ozonesonde launches will be made from the UNA in Heredia, approximately every other day, by a team of UNA students under the direction of Valdés and Valverde. The typical altitude achieved by the 1200-g CU/UNA balloons is 30 km.

The TDL water vapor campaign is led by Dr. Randy May of MayComm Instruments, LLC of San Dimas, CA. Dr. May's sondes will be launched over the course of the CR-AVE aircraft deployment period at the Juan Santamaria sonde site in coordination with the Vaisala radiosonde launches.

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